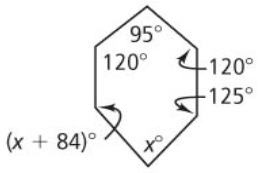
Name: _____ Period: _____

Chapter 6 Quiz 1 study guide

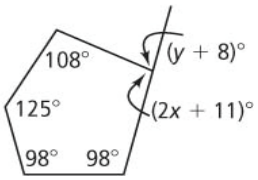
Find the value of each variable for the following polygons.

1.



x = 88

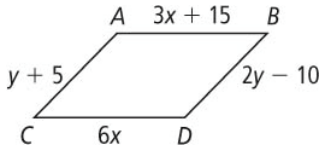
2.



x = 50; y = 61

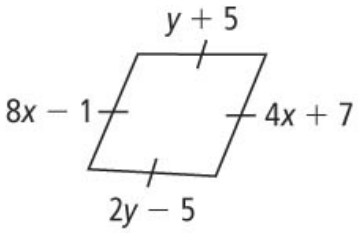
3. Find the value of each variable in parallelogram *ABCD*.

x = 5; y = 15



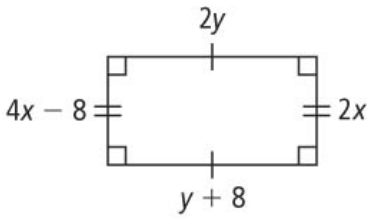
Find the values of the variables for the following figures to be parallelograms.

4.



x = 2; y = 10;

5.



x = 4; y = 8

Short answer

6. If the diagonals of a quadrilateral are perpendicular, can the quadrilateral be a rectangle? Explain (draw a picture to go along with your explanation).

Yes; when the quadrilateral is a square the diagonals are perpendicular and all squares are rectangles.

7. When you draw a diagonal of any parallelogram does it create congruent triangles? Explain (draw a picture to go along with your explanation).

Yes; the diagonal is a shared side and by definition parallelograms have opposite congruent sides, so by SSS the triangles are congruent.

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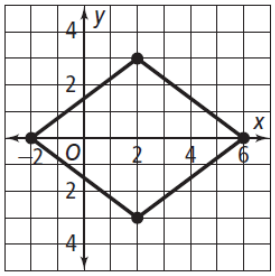
Use the provided theorem to prove that each of these is a parallelogram. You MUST use coordinate geometry (that is, the distance and/or slope formulas).

8. Theorem 6-8 OR 6-12 OR definition of a parallelogram (both pairs of sides are parallel)



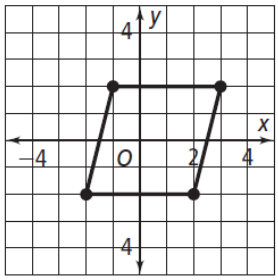
For all of these use the distance formula to show that sides are congruent (their lengths are equal) or use the slope formula to show that their slopes are the same (and thus they are parallel).

Sample calculation for #8 top-left and bottom-right sides:

d = $\sqrt{(2-(-2))^2+(3-0)^2}$

d = $\sqrt{(4)^2+(3)^2}$ = $\sqrt{16+9}$ = $\sqrt{25}$ = 5

9. Theorem 6-12

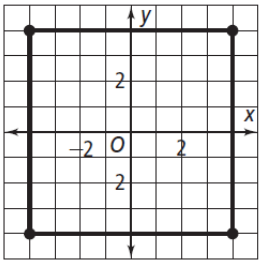


d = $\sqrt{(6-2)^2+(0-(-3))^2}$

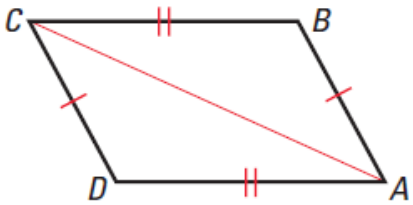
d = $\sqrt{(4)^2+(3)^2}$ = $\sqrt{16+9}$ = $\sqrt{25}$ = 5

Thus the two sides are congruent. To complete # 8 just show That the other two sides are also congruent and by theorem 6-8 the quadrilateral is a parallelogram.

10. Theorem 6-8



11. Complete the following proof of theorem 6-6.



Given: $\overline{AB} \cong \overline{CD}$; $\overline{AD} \cong \overline{CB}$

Prove: ABCD is a parallelogram

Statement	Reason
1. $\overline{AB} \cong \overline{CD}$; $\overline{AD} \cong \overline{CB}$	1. Given
2. $\overline{CA} \cong \overline{CA}$	2. Reflexive property of congruence
3. ΔABC ≅ ΔCDA	3. SSS
4. ∠BAC ≅ ∠DCA and ∠DAC ≅ ∠BCA	4. CPCTC
5. $\overline{AB} \parallel \overline{CD}$; $\overline{AD} \parallel \overline{CB}$	5. Converse of the alternate interior angles theorem
6. ABCD is a parallelogram	6. Definition of a parallelogram